Electronic Publication of Scholarly Information in Law: A View from the United States

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I. INTRODUCTION

This article examines the potential effects of the developing user-centered, networked information environment on scholarly communication in law. By "user-centered, networked information environment," I mean the emerging environment for legal research and scholarship, in which most seekers and users of legal information will have ready desktop access to a networked computer and to applications that will allow them to communicate with colleagues around the world and enable them to retrieve increasing amounts of the information they need to be productive directly via the Internet, without needing to rely on locally held print sources.

In discussing the potential impacts of this emerging research environment on legal scholarship, I will look at communication patterns in law and in other disciplines in order to weigh the possible impacts of developments in other disciplines for law. The general discussion will focus on developments in electronic publication of scholarly information in scientific disciplines such as physics and bio-medicine in the United States, and on their potential for transforming the traditional systems for publication of legal

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scholarship in the U.S. and elsewhere. One effect of this transformation will be to make legal scholarship more readily available to world wide audiences. I hope, too, that discussion of these U.S. developments will prove helpful to an international audience of readers interested in the issues posed by electronic publication of scholarly information.[1]

II. SCHOLARLY COMMUNICATION

What is scholarly communication? The concept is based in the continuing needs of researchers and scholars to communicate the results of their research and the new knowledge they have created: "[C]reating new knowledge is not enough; even to serve as an open-ended investment, knowledge must be communicated, ultimately to the next generation, but in the first instance to one's fellow researchers, to one's peers, so they can apply, test, and build upon it."[2] Scholars use a variety of means to disseminate research results and to communicate with others in their field, and think of scholarly communication in terms that include library-centered research but also go beyond it. All scholarly disciplines employ both 1) formal publication and dissemination of research results and contributions to the body of knowledge for the discipline (books, journal articles, presentation of papers, etc.), and 2) other, less formal, communications among scholars and researchers in the field (letters, conversations at meetings, phone calls, etc.) The disciplines differ in the extent to which they rely on any of these mechanisms. The important thing for librarians to keep in mind is that, for active researchers, there is much more involved in scholarly communication than the formal publications traditionally found in libraries.

Writers on the topic of scholarly communication vary in their definitions of the term. Some, like Robin Peek, take an historical perspective and define scholarly communication broadly to include the first conferences and other efforts to share scholarly information at Oxford in the 1640s, and

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[1] My own interests in this subject are those of a librarian, but I have also been involved in the Duke Law School's project to publish its student-edited journals on the Law School web site and I have served on an Association of American Law Schools advisory committee charged with examining the future of legal scholarship in this new environment.

[2] Stevan HARNAD, "Free at Last: The Future of Peer-Reviewed Journals," *D-Lib Magazine*, December 1999. <http://www.dlib.org/dlib/december99/12harnad.html>.

the publication of the first scholarly journal there in 1665.[3] Peter Lyman, on the other hand, has defined scholarly communication as a term that originated with the growth in importance of information technology in the processes of scholarly research and for scholars to communicate and share information. For Lyman, scholarly communication is a term "invented to frame both print publication and digital communication within a single functional schema" in an environment where information technology both changes the processes of research and creates new kinds of information products and services that were not available in a print environment.[4]

The future of scholarly communication is a much discussed topic not only among librarians, but within the academy generally. In the United States, there are frequent articles on the subject published in the daily electronic version of *The Chronicle of Higher Education* (<http://chronicle.com/>) and general publications such as the *New York Times* (<http://www.nytimes. com/>), as well as in more professional forums within and outside the literature of librarianship. Discussions in the library literature tend to focus on the effects of the Internet and electronic publication on journals, monographs, and other established formal publications of the types that libraries have traditionally collected. Outside librarianship, within the scholarly disciplines themselves, many of the discussions focus on the entire range of communications employed within a specific discipline, and cover both formal publication and other forms of communication beyond those typically found in library collections.[5]

Regardless of how one defines it, the interesting current questions in scholarly communication involve the ways in which information technology is changing the traditional roles and future possibilities for the existing parties

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[3] See Robin P. PEEK, "Scholarly Publishing, Facing the New Frontiers," in *Scholarly Publishing: The Electronic Frontier* 3, 5 (Robin P. Peek & Gregory B. Newby eds., 1996).

[4] Peter LYMAN, "Digital Documents and the Future of the Academic Community," in *Technology and Scholarly Communication* 366, 368 (Richard Ekman & Richard E. Quandt eds., 1999)

[5] Discussions in the disciplines often involve the evolving definitions of the "digital library," which take into consideration that both the traditional forms of published knowledge and less formal (and previously inaccessible) forms of information can now be disseminated and preserved in common digital formats. See Richard A. DANNER, "Redefining a Profession," 90 *Law Library Journal* 315, 346 (1998). <http://www.law.duke.edu/fac/danner/paper1.html>.

in the system of scholarly communications: scholars (as both creators and users of scholarly information), publishers, and libraries.

III. RESPONSES TO THE CHALLENGES POSED BY INFORMATION TECHNOLOGY

The general history and development of the current system for publication and dissemination of scholarly information are well-described in a recent article in the on-line journal *D-Lib*.[6] From the publication of the first modern scholarly journal in 1665 until after the second world war, scholarly societies were for the most part able to support scholars' interests in communicating with others involved in similar pursuits and to serve as the primary publishers of scholarly information. As funding for research increased, especially in science, technology and medicine (often referred to collectively as STM), the volume of specialized research reports and articles also increased to a point where commercially published journals began to supplement or supplant society journals as primary vehicles of scholarly communication. The commercial publishers, quickly realizing that demand for the journals was basically inelastic, were able to raise prices to maximize profits from a captive audience, consisting largely of libraries, creating what is generally described as a crisis situation for research libraries supporting research in the STM disciplines. Although this is not the environment in which legal scholarship is published (at least in the United States), it is important to understand it in order to look toward the publication of legal scholarship in the future.

In a pure print environment, the forms of communication among scholars for dissemination of research results are more limited than in a digital environment and are, therefore, likely to be similar across the disciplines. Because such forms as the scholarly journal are common among the disciplines, it might seem that their purposes are the same in each discipline. In reality, however, the roles that the journal plays in scholarly discourse might be quite different in law than in bio-medicine or in physics. Because the journal form is common, most initial attempts to apply the emerging possibilities of information technology in scholarly communication focus on either digital versions of existing journals or new, start-up journals developed to take greater advantage of the new medium.

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[6] Richard K. JOHNSON, "A Question of Access: SPARC, BioOne, and Society-Driven Electronic Publishing," *D-Lib Magazine*, May 2000. <http://www.dlib.org/dlib/may00/johnson/05johnson.html>.

Electronic versions of existing journals make sense from publishers' perspectives as means to maintain or increase revenues, and from libraries' perspectives as well. They increase access to established titles; provide potential solutions to storage and preservation concerns; can be managed in ways similar to the ways that print journals are; and (especially for high cost STM journals) have the potential to resolve subscription cost issues. Electronic versions of existing journals also appeal to the interests of scholars, because in most disciplines they carry a greater sense of prestige and permanency than do new electronic journals. Because of their stature, the established journals in a field are likely to get more submissions than purely electronic journals, even though the electronic versions of established journals might lack features (such as hyperlinks and multi-media capabilities) found in newer, more experimental journals. Publishing in an established journal that appears in print as well as in electronic form reduces authors' worries about circulation and exposure for their work among colleagues who remain wedded to print formats, while providing the benefits of electronic publication to others.[7] Established journals are also more likely to be included in standard indexes and the articles they publish are more likely to be found through traditional literature searches.

Many of the initial applications of information technology to scholarly communication, therefore, have focused on developing electronic versions of existing publications, sometimes in initiatives by print publishers, sometimes through efforts spearheaded by library consortia or other library-sponsored initiatives. Most commercial (and some university and society) publishers in all areas of research are pursuing electronic publication initiatives. In most cases, subscribers to current print versions receive or can buy licenses for access to web versions of existing journals, sometimes enhanced with hyperlinks and other features. Some publishers offer e-mail notifications when new issues are published.[8] Others provide pre-publication access to papers scheduled for publication in future issues.[9]

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[7] See Clifford LYNCH, "Electrifying the Book," *NetConnect* (supp. to *Library Journal*), Oct. 15, 1999, at 3, 5.

[8] For examples in law, see the web sites of: Kluwer Law International (<http://www.kluwerlaw.com/cgi-bin/journal.pl>), which offers some of its journals in both paper and electronic forms; and Oxford University Press (<http://www3.oup.co.uk/jnls/>), which offers full-text on-line versions and e-mail table of contents services.

[9] Wiley InterScience (<http://www3.interscience.wiley.com>), the online journals service of John Wiley & Sons offers subscribers pre-publication access to articles for such journals as the *Journal of the American Society for Information*

Prominent examples of non-commercial activities of this sort include:

Project Muse (<http://muse.jhu.edu/>) at John Hopkins University provides electronic versions of over 100 journal titles in the humanities and social sciences from its own university press and other scholarly presses.

Highwire Press (<http://highwire.stanford.edu/>) at Stanford University works with scientific societies and other journal publishers, primarily in the sciences, technology, and medicine, to support noncommercial publication of electronic journals. Highwire electronic journals add links among authors, articles and citations, advanced search capabilities, images, multimedia, and interactivity, to the information provided in the printed versions of the journals.

SPARC (<http://www.arl.org/sparc/>), an initiative of the Association of Research Libraries, is an alliance of libraries and library organizations aimed at supporting the development of high-quality, lower priced alternative journals in the sciences. One of SPARC's primary initiatives is BioOne (<http://www.bioone.org/>), a collaborative effort of publishers in scientific societies, universities, and the commercial sector to publish full-text web versions of a number of bioscience research journals.

JSTOR (for "journal storage") (<http://www.jstor.org/>) is a project of the Andrew W. Mellon Foundation designed to provide online access to core journals in a number of largely non-scientific fields, JSTOR provides bit-mapped page images of complete runs of its journals, usually extending forward to within two to five years of the current date. In addition to providing the text from the journal volumes, JSTOR includes searchable databases of its content.[10]

All of these initiatives are interesting and useful, but they also serve to maintain many of the old forms and institutions of print-era scholarly communication and seem to be aimed primarily at solving the problems of libraries and publishers. In large part they have not taken advantage of the

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Science.

[10] In April 2000, the William S. Hein Company announced a JSTOR-like product for law under the name Hein-On-Line. The initial offering is a retrospective collection of mostly pre-1925 U.S. legal journals. See <http://heinonline.org/>.

potential of electronic publication to improve scholarly communication, and have not used information technology to address all of the concerns of the creators and users of scholarly information. Even ARL's SPARC project, which has been widely praised for its efforts to create alternatives to the high cost commercial STM journals, has been criticized for being wedded to existing scholarly communication systems, rather than breaking new ground that might improve access and better meet the needs of scholars.[11] There are many good things to say about Mellon's JSTOR initiative, but, despite its successes in providing searchable digital replications of core scholarly journals, JSTOR remains an expensive program in retrospective digital publishing, without clear implications for the prospective publication of scholarly information in electronic forms.

IV. E-PRINT SERVERS

More interesting, because it breaks away from the standard journal model is the emerging movement to create accessible electronic archives of new scholarship. Groups of researchers in a number of disciplines have responded to problems in their own scholarly communication systems (caused mostly by the high costs and delays of commercially published journals) by establishing electronic archives of "e-prints" of articles or papers reporting recent research in the field.[12] Many of the papers, electronically posted directly by authors prior to acceptance for formal publication, are published eventually in the journals of the field, sometimes in versions revised after readers' comments on the original posted versions. Other papers remain available solely in e-print form. The goals of the e-print archive initiatives are to create more efficient scholarly communication systems within individual disciplines, as well as the means to disseminate scholarship to wider audiences.

Most prominent among these efforts is the highly successful e-print server for researchers in high-energy physics and other scientific disciplines) established by physicist Paul Ginsparg at the U.S. National Laboratory in Los Alamos, New Mexico, with federal government support. Ginsparg's server,

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[11] See David W. *Lewis*, "What if Libraries Are Artifact-Bound Institutions?," 18 *Info. Tech. & Libr.* 191, 195 (1998).

[12] The term "e-print" is generally used to refer to any paper published in an electronic archive; "pre-print" usually refers to papers that have not yet been formally published elsewhere in a print or electronic journal; "post-print" refers to electronically archived versions of articles that have been published elsewhere.

known as arXiv.org (<http://www.arXiv.org/>), allows researchers to post their research on the web without traditional peer review. Once posted, papers can be read and commented on by readers; authors can respond to comments, rework papers, and post revised versions of their work.[13] Eventually, many of the papers are selected for formal publication in the traditional journals in these fields, but versions remain posted on the Los Alamos site. Ginsparg is well-known for his skepticism about peer review, the effects on research of the costs of traditional scientific journals, and the time it takes for a paper to be published.[14]

Electronic servers have also been established for other disciplines: e.g., in cognitive sciences, psychology, neurology, and linguistics (CogPrints) (<http://cogprints.soton.ac.uk/>); economics (RePec) (<http://netec.mcc.ac.uk/RePEc/>) and theses and dissertations (NDLTD) (<http://www.ndltd.org/>). The U.S. Department of Energy's Office of Scientific and Technical Information (OSTI) (<http://www.osti.gov/eprints/>) maintains an online list of sites for e-prints in areas of science and technology related to DOE's research interests and provides a searchable gateway to the distributed servers it covers. In some archives, scholars post articles at will. Others use (or have discussed using) a minimal form of peer review before posting.

How transportable to other fields is the Los Alamos model? Some answers may be found in the recent efforts of the U.S. National Institutes of Health (NIH) to establish an electronic archive for research papers in bio-medicine. In May 1999, the director of the NIH announced a proposal to establish an electronic pre-print server for bio-medical research, making a case that the patterns of scholarly communication in bio-medicine and clinical research are similar to those in physics and the other disciplines served by the Los Alamos server. As initially presented, the NIH idea was to create low-cost, barrier-free access to research; thereby speeding the dissemination of information, allowing the incorporation of multi-media into research reports, deepening discussion among scientists, reducing frustrations with traditional

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[13] For introductions to the background and some of the issues posed by electronic preprints, see Gregory K. YOUNGEN, "Citation Patterns to Traditional and Electronic Preprints in the Published Literature," 59 *College & Res. Libr.* 448 (1998); Peter R. BOYCE, "For Better or Worse: Preprint Servers are Here to Stay," 61 *C&RL News* 404 (2000).

[14] See Paul GINSPARG, Winners and Losers in the Global Research Village (1996) (Paper submitted for UNESCO conference in Paris, Feb. 19-23, 1996). <http://arXiv.org/blurb/pg96unesco.html>

mechanisms for publishing, and saving substantial sums of public and private money.[15] These are many of the same advantages claimed for the Los Alamos server, which is visited by thousands of readers per day. In some ways, the NIH proposal was less radical than the Los Alamos server, which provides no mechanisms for peer review of posted papers. As first envisioned, the NIH server would have had two parts: one for papers that had undergone brief review before mounting; the other for papers that had undergone something closer to full peer review.

The public announcement generated great criticism and comment[16]: some (as expected) from publishers of established journals in the field who feared the effects on their revenues. In addition, some observers expressed concerns about giving either the public and practicing physicians too ready access to health-related research that had not been peer-reviewed and adequately tested for reliability. Others criticized the proposal for not being radical enough, because it called for minimal review prior to posting.

From a scholarly communications perspective, some critics also made the point that bio-medicine is a different discourse community than high energy physics, and that it was inappropriate to compare physicists' scholarly communication patterns with those of humanists, social scientists, and non-physics scientists. Well before the availability of electronic publication and the web, physicists were in the habit of sharing research results in pre-print form within relatively small communities of researchers.[17] Bio-medical researchers do not have a pre-print tradition and (some claimed) there was little evidence that they were clamoring for an e-print service.

On August 30, 1999, the NIH announced that it would establish "a depository for electronic distribution of primary research reports in the life sciences" to begin in January 2000 under the name PubMedCentral, the name

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[15] See E-BIOMED: A Proposal for Electronic Publications in the Biomedical Sciences (May 5, 1999 and June 20, 1999). <http://www.nih.gov/welcome/director/pubmedcentral/ebiomedarch.htm>

[16] For summaries of reactions to the proposal, see Goldie BLUMENSTYCK & Vincent KIERNAN, "Idea of On-Line Archives of Papers Sparks Debate on Future of Journals," *Chronicle of Higher Education*, July 9, 1999, at A25. <http://www.chronicle.com/ weekly/v45/i44/44a02501.htm>; Barbara QUINT, The NIH's E-Biomed Initiative, *Information Today*, September 1999, at 10. (<http://www.infotoday.com/it/sep/ quint.htm>).

[17] See YOUNGEN, *supra*, note 13 at 449.

establishing a connection to the NIH's existing PubMed biomedical literature database.[18] In apparent response to criticisms of the initial proposal, the announcement made clear that scholarly societies or other independent organization, but not the NIH itself, would pre-screen papers posted to the non-peer-reviewed part of the site. When it was finally made available to the public, PubMed Central included only peer-reviewed papers contributed by major journals in the life sciences.[19]

V. THE IMPORTANCE OF DISCIPLINE: DISCOURSE COMMUNITIES

The public furor over the NIH e-print server proposal surfaced substantial discontent and raised questions about the general applicability and usefulness of the Ginsparg/Los Alamos model for most scientific disciplines (let alone the social sciences and humanities). Much has been written both about the need to pay more attention to traditional differences among the disciplines as to scholarly communication patterns, norms, and formats; and in criticism of what some see as a "one-size-fits-all" approach to electronic scholarly publishing promoted by such proponents of e-print servers as Ginsparg and Stevan Harnad.[20] Much of the critical commentary is captured in the writings of Rob Kling and associates, who work through the Center of Social Informatics and Scholarly Communication and Information Technology at Indiana University (<http://www.slis.indiana.edu/SCIT>).[21]

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[18] See PubMed Central: An NIH-Operated Site for Electronic Distribution of Life Sciences Research Reports (August 30, 1999). <http://www.nih.gov/welcome/director/pubmedcentral/pubmedcentral.htm> For discussion see, Marianne BURKE, "PubMed Central: Be Careful What You Ask For," 61 *C&RL News* 21 (2000).

[19] See the PubMedCentral home page. <http://www.pubmedcentral.nih.gov/> See also Robin PEEK, "The PubMed Central Repository Launches," *Information Today*, April 2000, at 38.

[20] Most of Harnad's writings, as well as links to online discussions of the issues he raises, can be found at his web site at the University of Southampton. <http://cogsci.soton.ac.uk/~harnad/intpub.html>.

[21] See, e.g., Rob KLING & Geoffrey MCKIM, "Scholarly Communication and the Continuum of Electronic Publishing," 50 *Journal of the Am. Society for Information Science* 890 (1999) <http://arXiv.org/ftp/cs/papers/9903/9903015.pdf>; Rob KLING & Geoffrey MCKIM, "Not Just a Matter of Time: Field Differences and the Shaping of Electronic Media in Supporting Scientific Communication (2000)" (accepted for publication in the Journal of the American Society for Information Science). <http://arXiv.org/ftp/cs/papers/ 9909/9909008.pdf>.

In offering cautions about the universal applicability and benefits of such approaches as the Ginsparg server, Kling and other writers make useful contributions to conversations about the future of scholarly communication. By providing a broad range of new possibilities that could be applied in any discipline, information technology raises the potential for change and for resolving perceived problems in existing systems of scholarly communication. Solutions that work in one field of study, however, might not be appropriate for all. This makes it necessary to consider the particularities of the existing scholarly apparatus and patterns of communication among scholars and researchers within each discipline. Yet, in an evolving communications environment, it is important as well not to overemphasize traditional differences in scholarly communications practices among disciplines and thereby discourage experimentation with the possibilities of new models developed outside one's own field.

Law, like other disciplines, has developed preferred ways for creating and communicating knowledge and sharing information. As Jill Ramsfield has noted,[22] each discipline has its own discourse community: its own language, forms, and traditions which members use to communicate with each other and to work for common ends, e.g. advancing knowledge in the field and initiating new members into the group. Each community has specific mechanisms of intercommunication; information and feedback mechanisms; specific genres of communication (like the journal article for legal scholarship); and a specific lexicon (technical terminology, shorthand terms, abbreviations). In their book, *The Social Life of Information*, John Seely Brown and Paul Duguid present a particularly eloquent discussion of the role of scholarly documents in creating and nurturing "textual communities" among scholars and other groups.[23]

These things all provide the basis within each discourse community for meaningful conversation and communication, which are developed and maintained both by the practicing members of the community (the creators and users of scholarly information) and by those who support the community (libraries and publishers).

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[22] Jill J. RAMSFIELD, "Is 'Logic' Culturally Based? A Contrastive, International Approach to the U.S. Law Classroom," 47 *Journal of Legal Education* 157 (1997).

[23] John Seely BROWN & Paul DUGUID, The Social Life of Information 173-205 (2000).

VI. POSSIBLE FUTURES FOR SCHOLARLY PUBLICATION IN LAW

In the United States, the primary vehicle of legal scholarship is the law review article, published in journals housed at one of the nation's nearly two hundred law schools. In the U.S., there are few commercial or society-based scholarly journals in law, and few peer-edited legal journals of any sort. Nearly all law reviews are student run and edited.[24] Because of the student involvement and institutional support for what is seen as an educational activity, subscription costs for libraries and others are low. However, faculty criticisms of various aspects of the law review system date back at least to a frequently cited 1936 article by Yale law professor Fred Rodell,[25] and extend forward to the more recent comprehensive treatments by Bernard Hibbitts and others.[26] Hibbitts' work catalogs the range of faculty criticisms, most of which stem from the system's reliance on student editorial control of the primary means for scholarly communication. Among other things, faculty critics cite problems with student editors' selection processes and criteria, editing skills, and lengthy delays both in reviewing articles for publication and again before accepted articles appear in print. As Hibbitts makes clear, for law faculty, the long-standing shortcomings of the law review system have become magnified with the increased requirements for law professors to produce and publish scholarship in order to obtain tenure and promotion.

It would seem, on the face of it, that the e-print server would be an unlikely model for law, given the uproar that the NIH proposal caused in bio-medicine, a field much closer than law to most of those that have made successful use of the Ginsparg approach. The relatively sparse development

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[24] For listings of student-edited, as well as peer review and trade, journals, see Anderson Publishing Company's online directory published at <http://www.andersonpublishing.com/lawschool/directory/>.

[25] Fred RODELL, "Goodbye to Law Reviews," 23 *Virginia Law Review* 38 (1936).

[26] Bernard J. HIBBITTS, "Last Writes? Reassessing the Law Review in the Age of Cyberspace," 71 *New York University Law Review* 615 (1996) <http://www.law.pitt.edu/hibbitts/lastrev.htm>; Bernard J. HIBBITTS, "Yesterday Once More: Skeptics, Scribes and the Demise of Law Reviews," 30 *Akron Law Review* 267 (1996) <http://www.law.pitt.edu/ hibbitts/akron.htm>. For commentary by a prominent American legal historian, see Lawrence M. FRIEDMAN, "Law Reviews and Legal Scholarship: Some Comments," 75 *Denver University Law Review* 661 (1998).

of electronic journals in law might seem to support that position,[27] but (as discussed below) there has been substantial support and interest among legal scholars in the electronic "journals" and postings of papers on the web site of the Legal Scholarship Network, as well as in the pre- and post-print postings of articles on Hibbitts's Jurist web site (<http://jurist.law.pitt.edu/ol_artcl.htm>) and other law-oriented web sites. Law school faculties have also begun to publish their own working papers on school web sites.[28] The interest in these things reflects the perceived and actual shortcomings of the student-edited law review model cataloged by Hibbitts and others, and argues for exploring the e-print server approach.

In considering that approach and others, it is important to bear in mind one of the points made by Harnad, Ginsparg, and other proponents of the use of e-print servers to distribute new scholarship. As these writers point out, the recognized functions of scholarly publishing systems: 1) providing quality certification for new works through such devices as peer review, formal acceptance for publication, and editing; 2) enabling distribution and access to new works; 3) indexing them; and 4) archiving them can be separated or "decoupled" in electronic, or mixed print and electronic, publishing environments in ways that they cannot be in an all-print environment. Most importantly for this part of our discussion, the quality certification that typically comes with having an article accepted for publication in a print (or electronic) law review can be separated from the distribution and access function, and need not be lost if authors post papers on an e-print server. There is no reason to consider e-print posting and journal publication as exclusive alternatives, or for authors interested in posting their finished work on an e-print server to forego publication in a leading law review.

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[27] FindLaw indicates that there are presently about 31 general law school journals publishing some full text on the web. <http://lawschools.findlaw.com/journals/general.html>. The "Legal Journals on the Web" site maintained by the University of Southern California Law Library lists 20. <http://www.usc.edu/dept/law-lib/legal/journals.html> (Both sites checked on July 10, 2000).

Perhaps the most substantial commitment to electronic publication has been made by the Duke Law School. Since 1997, articles published in Duke's six student-edited journals have been published on the Law School's world wide web site, as well as in print. See <http://www.law.duke.edu/journals/>.

[28] See, for example, the Cornell Law School working papers site at <http://www4.law.cornell.edu/working-papers/>.

This could be particularly important in law, which has not been served by many society publishers or by the commercial publishers who in the STM fields are demonized by the other parties in the scholarly communications system. In law, the primary journals are published by law schools--institutional publishers with a number of close connections to the producers and readers of the literature. Law professors' works are often published in journals sponsored by their own schools (and edited by their own students), and nearly all U.S. law faculty members themselves served as journal editors while in law school.

The arrival of electronic publishing alternatives through the Internet and world wide web creates new opportunities for legal scholars unhappy with the shortcomings of the law review system. It also suggests new possibilities for commercial publishers interested in entering the market for publication of legal scholarship.[29] First to take advantage of the possibilities is the Legal Scholarship Network (LSN), which has become the leading archive of legal scholarship currently on the web since its establishment in 1997. LSN is a division of the Social Science Research Network (SSRN) (<http://www.ssrn.com/>), which includes several other components (*e.g.*, accounting and economics) in addition to law.

LSN is directed by a trio of legal scholars affiliated with the Stanford and Columbia law schools. Presently, LSN publishes about 50 different electronic subject matter "journals" under titles such as "Administrative Law," "Contracts and Commercial Law," or "Cyberspace Law"; and about 45 working papers series published under the names of individual law schools.[30] LSN's e-mail journals provide announcements of new papers and contain abstracts of new papers and (for most papers) links to the full text of the papers on the LSN web site. Nearly all U.S. law schools have site licenses to LSN, (as do a large number of law schools outside the U.S. and

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[29] Heretofore, the most significant development in publication of legal scholarship has been the establishment of law review databases on Lexis and Westlaw. Each of those services has developed substantial full text libraries of articles published in standard law reviews dating back for most journals to the early to mid-1990s.

[30] Many of the working papers journals (and some of the subject journals) are listed as "forthcoming" on the SSRN web site, and a number of the subject matter journals are subsets of more encompassing journal titles. Some of the "forthcoming" journals do contain papers posted to the web site. (Site checked July 10, 2000.)

many law firms and corporations).[31] A law school site license entitles all law faculty members to subscribe to any number of the LSN e-mail journals.

The papers stored on the SSRN web site are open to any user of the web and can be searched by author's name, by abstract/article title, or by words within the text of the abstract. After locating a paper, researchers may read an abstract and (if the author has deposited an electronic copy of the paper in the archive) view and print a .pdf file of the full paper without charge. LSN invites authors to submit both papers and abstracts through a simple (but lengthy) form on the SSRN web site. All authors submit abstracts of their papers; LSN encourages them to submit electronic versions of the full paper as well as abstracts. As part of the submission process, authors designate the journals in which they wish their abstracts to appear. Abstracts are not published until the editor of a designated journal approves inclusion of the abstract.

SSRN and LSN thus serve to approximate the e-print servers being developed in other fields, and the popularity of the service for both authors and researchers supports the case for the applicability of the e-print server model to law. SSRN does not post figures on the size of the LSN archive alone, but in mid-July 2000, the entire SSRN archive (including law) contained over 20,000 abstracts and nearly 8,000 full papers. At the same time, LSN's most popular paper had been downloaded nearly 18,500 times; at least a dozen others had been downloaded more than 1,000 times apiece.[32]

LSN's popularity brings forward some of the cautions that might be raised about the entrance of any commercial publisher into an area of legal publishing that has heretofore been almost entirely outside the commercial realm. As discussed above, many other fields (and the libraries that support them) have endured the costs of an ongoing crisis in scholarly publishing, which is usually attributed to the pricing policies of large commercial publishers operating in small, inelastic markets. In the STM fields, skyrocketing prices were a primary incentive for development of the e-print servers described above. Legal journals in the United States are not high-priced, and LSN's initial prices for subscriptions and institutional licenses are also extremely low. But, prices could be raised at any time as new revenue is required to improve interfaces and search engines, and to maintain quick

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[31] An up-to-date list of LSN site license holders is posted on the SSRN web site at <http://www.ssrn.com/update/lsn/lsn_site-licenses.html>.

[32] Figures posted on the SSRN web site (July 10, 2000).

access to papers as the database grows in size and use. As technology improves, LSN could well require subscriptions or site licenses for access to papers stored in the archive as well as for subscriptions to its e-mail journals, or initiate a download charge for papers accessed from the archive.[33] There is, therefore, some reason for the legal discourse community to be concerned about the future costs of access to the LSN archive (or any other commercial database), particularly in light of the traditionally low costs of access to legal scholarship. As legal scholars move to take advantage of the benefits of commercially provided electronic publication and dissemination of their work, they (like scholars in other disciplines) could lose control of their intellectual capital to a profit-making enterprise, while the libraries of their home institutions might have to pay large sums to buy back scholarship that their own faculty members have produced.[34]

VII. CONCLUSION

Law professors, of course, do not have to rely on commercial sources for publication and dissemination of their scholarship. As noted above, the rapid development of world-wide-web sites at nearly all U.S. law schools has lowered the barriers both for schools wishing to publish journals and working paper series electronically and for individual faculty members wishing to self-publish their work in advance or independently of its appearance in more traditional venues. Institutional support for electronic publishing initiatives and encouragement of experimentation can provide an effective counterweight to commercial development of the electronic publishing space for legal

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[33] LSN has circulated materials suggesting that the currently open downloading rights will be restricted within the "near future."

[34] It should be emphasized that LSN does not obtain exclusive rights to the scholarship it publishes, much of which is published also in law reviews; and is available electronically via Lexis and Westlaw, and on law school web sites or those of the authors themselves. LSN thus operates in a competitive market that already includes Lexis and Westlaw, and will probably include new electronic publishing alternatives from the law schools themselves. Yet, as in other Internet businesses, one should not be too quick to underestimate the importance of being first into a developing market. The first provider to develop a critical mass of papers or users could effectively block the efforts of other, perhaps better, providers simply because of the initial traffic it has created. Even if their papers are accessible elsewhere, scholars might want their papers posted on a major commercial service in order to be sure they are read.

scholarship, keep prices low, and help law schools maintain and improve their traditional roles in publishing and distributing the literature of the field.

It is possible to forecast an eventual transformation of the traditional law review system from a print to an electronic environment, presumably after a transitional period during which most journals appear in both print and electronic formats. Increasingly, legal scholars and researchers will look to the web and other electronic venues as primary or even exclusive sources of information, and law school deans will surely see that electronic publication is cheaper than print and capable of broadening a journal's audience, at least for the numerous secondary subject-specific journals that have proliferated at many schools in recent years.

Yet, even an immediate, full-scale movement of law journals from print to electronic publication would not resolve all of the inefficiencies and other problems that the law review system poses for legal scholars. The ready availability of the world wide web as a means of publication at law schools and universities has created alternative publishing opportunities for law schools and for individual scholars.[35] Initiatives in self-publication and institutional working papers series make legal scholarship accessible outside the journal system. They also raise the questions of how many researchers know that the papers are posted or can find them given the amount of material posted on the world wide web and the primitive nature of current finding tools. How can scholars who have posted papers individually or as part of a law school papers series ensure that someone reads their work? How can other researchers be sure that they have found electronically-posted scholarship needed for their research?

As noted above, interest in e-print servers in other disciplines has led to the Open Archives initiative (OAi), an effort to promote the development of interoperability standards for e-print servers. Interoperability refers generally to providing researchers the ability to access and use multiple digital libraries as if they were one. As e-print servers continue to be built on the disciplinary level, or by institutions, academic departments, or individuals, participants in the Open Archives initiative hope to develop standards for common interfaces and approaches, searching, and additional services, with

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[35] The most prominent examples in the United States are Cornell Law School's Legal Information Institute (<http://www.law.cornell.edu/>) and the Jurist site created by Bernard Hibbitts at the University of Pittsburgh School of Law (<http://jurist.law.pitt.edu/>).

the end goal of facilitating international and interdisciplinary access to electronically published scholarship. The group's first meeting in October 1999 resulted in the Santa Fe Convention, a set of initial technical standards and guidelines for providers of e-print servers, designed to promote interoperability and to facilitate searching for scholarship posted on the web.[36]

In law, a project employing approaches similar to those of the Open Archives group is being developed in a cooperative effort of the Harvard Law School Library and the Cornell Legal Information Institute under the name: Legal Electronic Document Archive (LEDA). LEDA is designed to provide law schools with the capabilities for creating local e-print servers, which can be used to hold and preserve whatever varieties of legal scholarship (working papers, published articles, theses, briefs) a school chooses to include. It is expected that LEDA servers will operate in conformance with the developing standards for interoperability and will allow for cross-server searching.

If successful, these kinds of collaborative efforts within the legal discourse community could provide law schools with inexpensive means of entree into web-based publishing of scholarly literature, thereby providing not only an alternative to print journals but the potential for creating an accessible and open space for legal scholarship that resolves some of the long-standing shortcomings of the law review system and preserves the most important institutional benefits of the traditional school-based system of publication.

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[36] The documents that make up the Santa Fe convention can be found on the Open Archives initiative web site at <http://www.openarchives.org/sfc/sfc_entry.htm>. For information about archiving software designed to meet Santa Fe Convention standards, see <http://www.eprints.org>.